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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,694	12/19/2000	Rick Pekkala	BAN:0104	4584

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EXAMINER	
HAN, CLEMENCE S	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/740,694	PEKKALA ET AL.	
	Examiner	Art Unit	
	Clemence Han	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,16,23,25,27,31,32,34-36,38-42 and 44-49* is/are rejected.

7)☒ Claim(s) *9–15, 17–22, 24, 26, 28–30, 33, 37 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 2–5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

3. The disclosure is objected to because of the following informalities: There is a typographical error in page 5 line 3 of the specification, "Sin0ce".

Appropriate correction is required.

Claim Objections

4. Claims 30 and 45 are objected to because of the following informalities: There are typographical errors in the first and second line of the claims, respectively. The first line of claim 30 should be "a product of a number of said" and the second line of claim 45 should be "wherein the number of said plurality". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 6, 45, 46 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claim 6 recites the limitation "the first memory" in line 2. There is insufficient antecedent basis for this limitation in the claim.

8. The term "substantially" in claims 45, 46 and 48 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claim 1–8, 16, 23, 25, 27, 31, 32, 34–36, 38–42, 44 and 46–48 are rejected under 35 U.S.C. 102(e) as being anticipated by Bloch et al. (US Pub. 2001/0043564).

In regard to claim 1, Bloch teaches a method for buffering packets transmitted to an Infiniband port by an Infiniband device linked to the port, comprising: providing a portion of a memory for buffering the packets, wherein the portion has a size A (See actual spare buffer space in [0009]); transmitting flow control credits to advertise to the device buffering resources of a size B (See maximum spare allocations in [0009]), wherein B is greater than A; determining when the portion is filled with a predetermined amount of the packets [0053]; and transmitting flow control credits to the device to stop transmission of the packets in response to said determining [0053].

In regard to claim 2, Bloch teaches said transmitting flow control credits to advertise to the device buffering resources of a size B comprising transmitting flow control credits to the device for a plurality of Infiniband virtual lanes configured on the port (Figure 1).

In regard to claim 3, Bloch teaches plurality of Infiniband virtual lanes comprising a number of data virtual lanes from the list consisting of fifteen, eight, four and two [0037].

In regard to claim 4, Bloch teaches transmitting flow control credits to the device to stop transmission of the packets comprising transmitting flow control credits to the device for a plurality of Infiniband virtual lanes configured on the port (Figure 1).

In regard to claim 5, Bloch teaches providing a second memory for buffering the packets transmitted subsequent to said determining [0043].

In regard to claim 6, Bloch teaches said second memory coupled between the port and the first memory [0043].

In regard to claim 7, Bloch teaches said determining the portion is filled a predetermined amount comprising determining the portion is approximately full [0053].

In regard to claim 8, Bloch teaches providing a second memory comprising providing a second memory having a size C [0043].

In regard to claim 16, Bloch teaches buffering the packets transmitted by the device subsequent to said determining in a reserved amount of the portion of the memory, wherein said reserved amount is beyond the predetermined amount [0043].

In regard to claim 23, Bloch teaches determining the portion of the memory is filled a predetermined amount comprises determining an amount of free space in the portion of the memory drops below the predetermined amount [0053].

In regard to claim 25, Bloch teaches providing a portion of a memory for buffering the packets comprising dynamically allocating the memory from a pool of memory shared among the port and a plurality of other Infiniband ports [0043].

In regard to claim 27, Bloch teaches providing a portion of a memory for buffering the packets comprises providing the portion of the memory to the port based on a plurality of other ports sharing the memory with the port [0043].

In regard to claim 31, Bloch teaches a method for controlling flow of packets into a plurality of ports on an Infiniband device, comprising: providing a memory for buffering the packets, wherein the memory has a size A (See actual spare buffer space in [0009]); transmitting flow control credits by the plurality of

ports to advertise packet buffering resources of a size B (See maximum spare allocations in [0009]), wherein B is greater than A; and transmitting flow control credits by at least one of the plurality of ports to stop transmission of the packets into the at least one port in response to determining an amount of free space in the memory drops below a predetermined threshold [0053].

In regard to claim 32, Bloch teaches transmitting flow control credits by the plurality of ports to advertise packet buffering resources of a size B comprising transmitting flow control credits for each of a plurality of virtual lanes configured on each of the plurality of ports (Figure 1).

In regard to claim 34, Bloch teaches predetermined threshold approximately zero [0053], wherein said method further comprising providing a second memory for buffering the packets transmitted subsequent to said determining [0043].

In regard to claim 35, Bloch teaches a system for buffering packets transmitted by a link partner linked to an Infiniband port, comprising: a first memory, for buffering the packets from the port [0009]; flow control logic, configured to advertise to the link partner more buffering resources than are available in said first memory for buffering the packets if space is available in said first memory to buffer the packets, and to advertise no buffering resources if no space is available [0009]; and a second memory, coupled between the port and said

first memory, for buffering the packets when no buffering resources are available in said first memory [0043].

In regard to claim 36, Bloch teaches second memory configured to receive the packets independent of a plurality of virtual lanes specified in the packets [0043].

In regard to claim 38, Bloch teaches flow control logic configured to advertise to the link partner said buffering resources for a plurality of virtual lanes configured on the port (Figure 1).

In regard to claim 39, Bloch teaches a system for buffering packets transmitted by a link partner linked to an Infiniband port, comprising: a memory, having a size [0009]; an inline buffer, coupled between the port and said memory, for selectively buffering the packets if said memory is full [0043]; and flow control logic, configured to advertise to the link partner more flow control credits than space available in said memory, wherein said flow control logic is further configured to advertise to the link partner zero flow control credits when said memory is full [0009], [0053].

In regard to claim 40, Bloch teaches flow control logic configured to advertise to the link partner more flow control credits than space available in said memory across a plurality of virtual lanes configured on the port (Figure 1).

In regard to claim 41, Bloch teaches a system for buffering packets transmitted by a link partner linked to an Infiniband port, comprising: a memory, for buffering the packets from the port [0009]; a buffer controller, for monitoring an amount of free space in said memory [0009]; and flow control logic, configured to advertise to the link partner more buffering resources than are available in said memory for buffering the packets from the port if said buffer controller indicates said amount of free space is above a predetermined threshold [0009], [0053].

In regard to claim 42, Bloch teaches flow control logic further configured to advertise to the link partner no buffering resources if said buffer controller indicates said amount of free space is below said predetermined threshold [0053].

In regard to claim 44, Bloch teaches flow control logic configured to advertise to the link partner said buffering resources for a plurality of virtual lanes configured on the port (Figure 1).

In regard to claim 46, Bloch teaches an Infiniband device, comprising: a plurality of ports, each having a plurality of virtual lanes configured therein; memory, for buffering packets received by said plurality of ports, said memory having a predetermined size (See actual spare buffer space in [0009]); and flow control, for advertising an amount of buffering resources comprising at least two Infiniband packets worth of flow control credits for each of said plurality of virtual

lanes configured in each of said plurality of ports [0053]; wherein said advertised amount of buffering resources substantially exceeds said predetermined size of said memory (See maximum spare allocations in [0009]).

In regard to claim 47, Bloch teaches Infiniband device as an Infiniband switch, router or channel adapter [0036].

In regard to claim 48, Bloch teaches a buffering system in an Infiniband device, comprising: a port, having a plurality of virtual lanes configured therein; a memory, for buffering packets received by said port, said memory having a predetermined size (See actual spare buffer space in [0009]); and flow control, configured to advertise an amount of buffering resources comprising at least two Infiniband packets worth of flow control credits for each of said plurality of virtual lanes configured in said port [0053]; wherein said advertised amount of buffering resources substantially exceeds said predetermined size of said memory (See maximum spare allocations in [0009]).

In regard to claim 49, Bloch teaches flow control further configured to advertise zero credits for each of said plurality of virtual lanes configured in said port upon determining less than a predetermined amount of said memory is free to buffer said packets received from said port [0009], [0053].

Allowable Subject Matter

11. Claims 9–15, 17–22, 24, 26, 28–30, 33, 37 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claim 45 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to the flow control in general.

U.S. Patent 6,078,565 to Ben-Michael et al.

U.S. Patent 6,760,307 to Dunning et al.

U.S. Pub. 2002/0146022 to Van Doren et al.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clemence Han whose telephone number is (703) 305-0372. The examiner can normally be reached on Monday-Friday 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. H.

Clemence Han
Examiner
Art Unit 2665

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600